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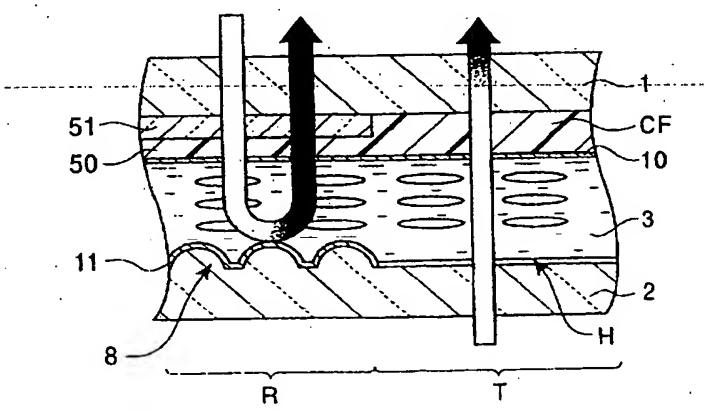
(54) Display apparatus with colour filter and method of manufacturing the same

(57) A hybrid type display apparatus capable of maintaining color purity in a case of transmission mode display, and improving lightness of color in a case of reflection mode display is provided. This hybrid type display apparatus is comprised of: a pair of first and second substrates (1,2); a first electrode (10) provided on an internal surface of the first substrate (1); a second electrode (11) provided on an internal surface of the second substrate (2); a color filter (CF) provided on the first substrate (1), aligned with a pixel in a portion between the first electrode and the second electrode; a liquid crystal layer (3) interposed between the pair of substrates; and a reflection layer (8) provided on the second substrate. The reflection layer (8) has a hole provided for each pixel, which divides a plane of each pixel into a transmission portion (T) within the hole and a reflection portion (R) outside the hole. The color filter comprises a lamination of a colored layer (50) and a transparent layer (51).

FIG. 1A



EP 1 109 053 A3

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EUROPEAN SEARCH REPORT

Application Number
EP 00 40 3497

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
D,A	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 05, 31 May 1999 (1999-05-31) & JP 11 052366 A (TOPPAN PRINTING CO LTD), 26 February 1999 (1999-02-26) * abstract *	1,7,13	G02F1/1335
D,A	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 12, 29 October 1999 (1999-10-29) & JP 11 183892 A (CASIO COMPUT CO LTD), 9 July 1999 (1999-07-09) * abstract *	1,7,13	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

G02F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	7 June 2001	Gill, R

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 11052366 A	26-02-1999	NONE	
JP 11183892 A	09-07-1999	NONE	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82